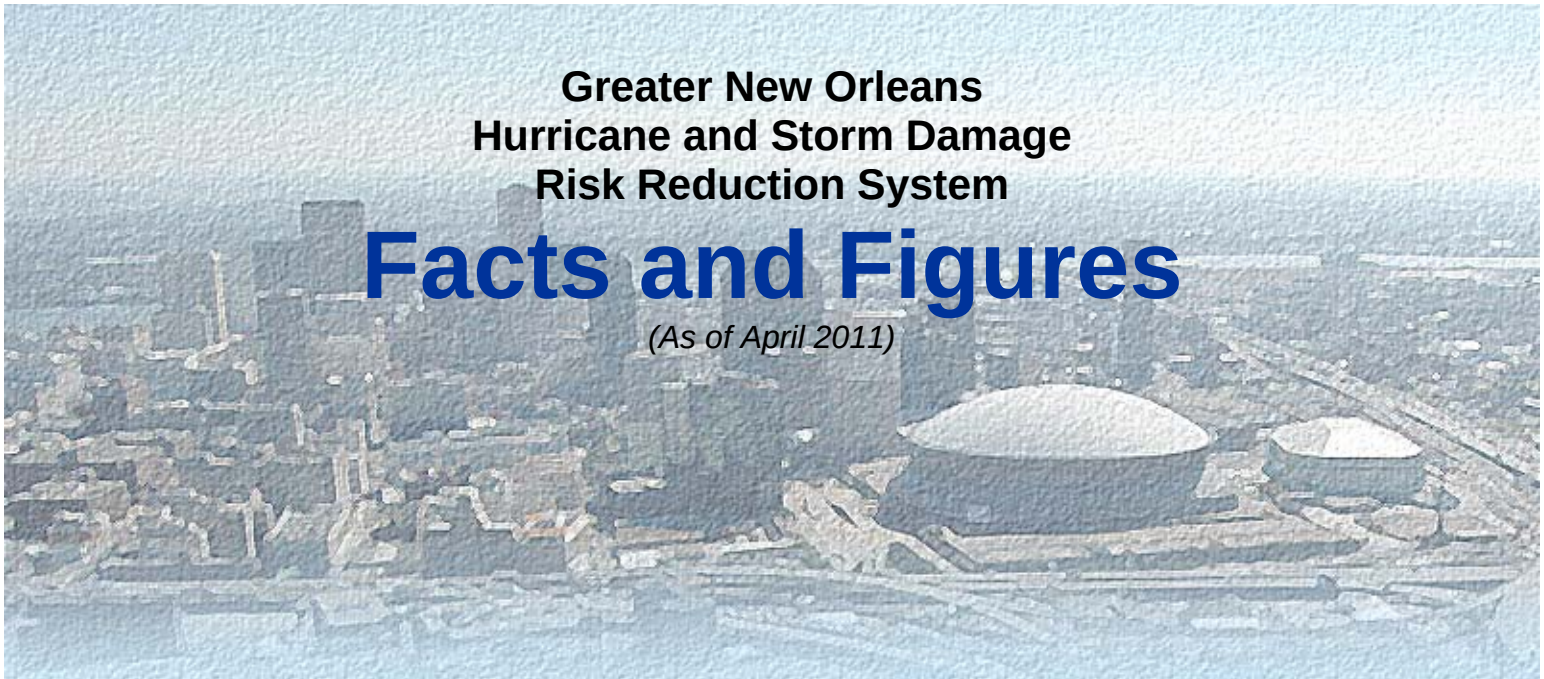

Greater New Orleans Hurricane and Storm Damage Risk Reduction System

Facts and Figures

(As of April 2011)

Following Hurricanes Katrina and Rita in 2005, the U.S. Army Corps of Engineers was authorized and funded to design and construct the Hurricane and Storm Damage Risk Reduction System for southeast Louisiana.

The 350-mile system, when completed, will consist of reinforced levees, T-wall floodwalls, surge barriers, pump stations and floodgates.

The Corps' operational goal is to have physical features in place to defend against the effects of a 100-year level storm by 1 June 2011.

US Army Corps of Engineers®

"Gee Whiz" Facts & Figures

HSDRRS

- Biggest deep soil mixing project in the U.S. (New Orleans East)
- Largest wick drain project in the U.S. (New Orleans East)
- Over $2 Billion in Small Business contracts and counting
- About 4,000 jobs created and counting

Inner Harbor Navigation Canal Surge Barrier

- Largest Corps civil works Design/Build project
- Largest surge barrier of its kind in the world
- Largest single project ever built in Louisiana
- Largest continuous placement of concrete since construction of Hoover Dam (1,000 truckloads)
- 18 floating cranes at height of construction
- Used 3 of 5 largest cranes in U.S. for pile driving

West Closure Complex

- Largest drainage pump station in the world
- Largest sector gate in the U.S.
- Over 18 million pounds of rebar (equivalent to 30 747 airplanes)
- Over 3 million man hours and counting

Cover design by Tom Durel

Levees and Floodwalls

There are 350 miles of levees/floodwalls in the HSDRRS

- Levee: an earth embankment, floodwall or structure along a water course whose purpose is flood damage reduction or water conveyance.
- The levees and floodwalls in the HSDRRS are being restored and/or raised to provide the 100-year level of risk reduction.
- Floodwalls have been reinforced at numerous locations, and transitions between floodwalls and levees have been strengthened and armored.
- I-walls have been replaced by stronger T-walls at breach sites. Stick-up has been reduced.

Armoring

- Armoring can be grass, geo-textile materials, stone or paving materials.
- Armoring adds resiliency to a levee and can reduce erosion and scouring of back slopes when wave overtopping occurs.
- Since Katrina the Corps has undertaken a concerted effort to improve standard armoring methods and is working with academia to research the use of various armoring materials.
- About 420 transition spots (where a floodwall meets a levee) will be armored.

Borrow (levee clay)

- Total amount of borrow required for the HSDRRS is approximately 93 million cubic yards.
- Approximately 216 million cubic yards have been approved as suitable for levee construction.
- Approximately 1 million cubic yards of borrow are under investigation.

1 Superdome = 4.4 million cubic yards

Major Projects

West Bank & Vicinity Projects

- Currently, there are 48 on-going construction contracts throughout the WB&V including the West Closure Complex project.
- Approximately $3 B in construction contracts has been awarded with another $300 M spent on design, inspection and environmental compliance.
- Fronting protection projects are underway at 17 pump stations for a total cost of $350 M.
- There are several significant structures under construction on the West Bank, such as the floodgates at Bayou Verret, Bayou Segnette and Hero Canal. Modifications are underway at the Harvey Canal Floodwall.

- **Gulf Intracoastal Waterway—West Closure Complex**
The GIWW-WCC is a major feature of the HSDRRS that will provide the first line of defense from storm surge entering the Harvey and Algiers Canals. The WCC will significantly reduce the risk to a large area of the West Bank by eliminating 25 miles of levees, floodwalls, floodgates and pumping stations along the canals from the direct impacts of storm surge. The nearly $1 B project will consist of the nation's largest sector gate, the world's largest drainage pump station, floodwalls, sluice gates, foreshore protection and an earthen levee. The project also includes dredging of Algiers Canal, beneficial use of the dredge material and realignment of a protion of Bayou Road in Plaquemines Parish. Construction of this enormous project began in August 2009 and it is already nearly 74% complete as of April 2011.

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Lake Pontchartrain & Vicinity Projects (East Bank)

- **Inner Harbor Navigation Canal Surge Barriers**
Construction of the massive IHNC Surge Barrier at Lake Borgne, the largest design-build civil works project in Corps history, began in May 2009. The project is a key feature of the HSDRRS – providing 100-year level defense to a large portion of Orleans and St. Bernard parishes by reducing surge coming from Lake Borgne and the Gulf of Mexico.

  The 1.8-mile barrier, the largest of its kind in the world, includes three gated structures and a barrier wall that stands 26 feet above the water line. The barrier wall is 100% complete and all three gates will be operable in June 2011.

  The Seabrook Floodgate Complex is being constructed in the Seabrook area of the Industrial Canal to reduce storm surge entering from Lake Pontchartrain. Seabrook will work in tandem with the IHNC Surge Barrier to provide 100-year level risk reduction to the entire IHNC corridor. Construction on Seabrook began in Fall 2010. The Seabrook Interim Closure Structure is in place and will provide 100-year risk reduction until the permanent structure is completed.

- **St. Charles Parish** — all 14 construction contracts have been awarded, 7 are under construction, and 7 are complete. The contracts include work on levee reaches, drainage structures, floodwalls, a railroad gate and fronting protection.

- **Jefferson Parish** — all 16 contracts have been awarded, 12 are under construction, and 4 are complete. All 5 Lakefront levee reaches have attained 100-year level risk reduction. The contract for Causeway modifications was awarded August 2010; however, work was delayed until October due to a protest. The project will be able to defend against a 100-year storm by June 1.

- **Orleans Metro** — More than 95% meets 100-year level. All 5 contracts have been awarded. Raising approximately 6 miles of levees and replacing or strengthening 1.5 miles of existing floodwalls. On-going improvements include all road crossings and gates from 17th St. Canal to the west side of IHNC.

- **New Orleans East—** All 11 contracts have been awarded. Raising approximately 25 miles of levees and constructing approximately 2 miles of T-walls from Lakefront Airport to Michoud Canal. Replacing existing gates on Highways 11 and 90.

- **St. Bernard Parish** — All 7 contracts have been awarded. Constructing approximately 23 miles of new floodwalls from Bayou Bienvenue to Caernarvon (raising from 20 to 29 feet and, in some places, to 31.5 feet). Constructing new sector gate at Bayou Dupre. Adding floodgates across Highway 46 and replacing the floodgate at Bayou Road. Constructing new floodwalls with a sector gate across the Caernarvon Canal. Floodwalls will continue along the canal toward the Mississippi River, cross Highway 39 and the Norfolk Southern railroad tracks, then tie-in with the Mississippi River Levee.

Grand Isle

- Completed $26 million program. Reconstructed 5.7 miles of sand dunes with a geo-textile tube core / sand cap. Construction began in May 2009 and was completed in April 2010. The tubes were filled with sand removed from excavation of the existing dune. The sand cover and beach nourishment portion of the project was dredged from an offshore borrow site.

Plaquemines Parish

The Corps of Engineers is engaged in two separate Federal projects on a complementary timeline that will reduce risk in Plaquemines Parish below Oakville where the HSDRRS ends.

- The **Plaquemines Parish Non-Federal Levee project** includes replacing or modifying 32 miles of current levees between Oakville and St. Jude on the West Bank of the Mississippi River, and constructing 2 miles of earthen levees from the ground level. When completed in 2014, these levees will be part of the New Orleans to Venice Federal levee system..

- The **New Orleans to Venice project** includes completing existing Federal levees on the East Bank from Phoenix to Bohemia, and on the West Bank from St. Jude to Venice, scheduled for completion in 2015.

Southeast Louisiana Project (SELA)

- The SELA program is authorized for interior drainage improvements to reduce damage due to rainfall flooding in Orleans, Jefferson and St. Tammany parishes.

- After Hurricane Katrina, Congress appropriated funds to complete the authorized SELA projects in Orleans and Jefferson parishes.

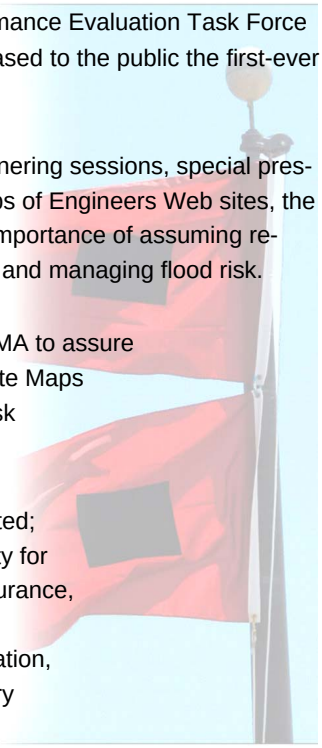
- In Jefferson Parish, 41 contracts have been awarded to date, with 40 completed.

- In Orleans Parish, 11 contracts have been awarded, with 8 completed.

- Currently work in Orleans and Jefferson parishes is about 60% complete with 23 construction contracts remaining to be awarded. Construction within the two parishes should be completed in 2017.

- For the proposed work in St. Tammany Parish, there are currently 7 projects authorized to move into the study phase. The W-14 Canal Study near the City of Slidell is currently underway as part of this effort.

Risk Management



- Using the Interagency Performance Evaluation Task Force model results, the Corps released to the public the first-ever flood depth maps.

- Utilizing public meetings, partnering sessions, special presentations and U.S. Army Corps of Engineers Web sites, the Corps is communicating the importance of assuming responsibility for understanding and managing flood risk.

- The Corps partnered with FEMA to assure accurate Flood Insurance Rate Maps are available to depict true risk of flooding.

- Risk cannot totally be eliminated; everyone shares responsibility for buying down risk through insurance, zoning and building codes, coastal protection and restoration, and complying with mandatory evacuations.

Funding

The Hurricane and Storm Damage Risk Reduction System (HSDRRS) is fully funded at **$14.45 B**.

2nd and 3rd Supplementals:	$2.2 B
4th Supplemental:	$3.6 B
5th Supplemental:	$1.3 B
6th Supplemental:	$5.7 B
7th Supplemental:	$0.1 B
Federal share:	**$12.8 B**
Non-Federal Cost Share (to be repaid over 30 years)	$1.5 B
Total:	**$14.45 B**

Construction Contracts

Contracts	***Number***	***Estimated* Value**
Total Planned	401	
Total Awarded	329	$8.6 B
In Construction	124	$6.6 B

As of April 20, 2011

Outfall Canals

Construction and installation of the interim closure structures and pump stations at the three outfall canals was performed before the start of the 2006 Hurricane Season.

The total maximum pumping capacity today at the three outfall canal pumps is about 16,000 cubic feet per second.

17th St. Canal - 9,200 cfs total pumping capacity
Orleans Ave. Canal - 2,200 cfs total pumping capacity
London Ave. Canal - 5,200 cfs total pumping capacity

Supervisory Control and Data Acquisition (SCADA) equipment installed at the outfall canals gives the Corps a remote computerized control system to operate the pumps and gates while monitoring water levels in the canals.

The pumps, gates and SCADA equipment performed successfully during Hurricanes Gustav and Ike in September 2008. The interim closure structures and temporary pumps at the three outfall canals will be replaced with permanent closures and pumps, scheduled for completion in 2014.

The Corps is currently performing remediation work on the canal walls to meet new, post-Katrina criteria that addresses seepage, stability and deflection issues. The remediation work will be completed in June 2011.

Pump Stations

There are 78 pump stations (Federal and Non-Federal) in the 4-parish area. Following Hurricanes Katrina and Rita, the Corps received authorization and funding for 33 repair projects. All projects are now completed except 1 in St. Bernard Parish and one that is included in a stormproofing contract in Orleans Parish.

Pump Station repair projects included:

Jefferson Parish ($2.7 M):
- 8 repair projects at 17 stations

Orleans Parish ($50.8 M):
- 14 repair projects at 23 stations and the Carrollton Frequency Changer Building

St. Bernard Parish ($27.6 M):
- 6 repair projects at 8 stations

Plaquemines Parish ($26.5 M):
- 5 repair projects at 13 stations

Storm Proofing of Pump Stations

There are 26 planned and funded Storm Proofing projects in Jefferson and Orleans parishes. The program is more than 46% complete.

Jefferson Parish: 13 projects, $136 M
There are 25 pump stations divided into 16 individual storm proofing construction projects.

- 9 in construction, 4 complete

Orleans Parish: 13 projects, $204 M
There are 24 pump stations divided into 18 individual storm proofing construction projects.

- 10 in construction, 3 complete

Mississippi River Gulf Outlet

Mississippi River Gulf Outlet (MRGO)

- The MRGO was de-authorized for navigation and closed in April 2009. It is not a part of the HSDRRS.
- The MRGO Ecosystem Restoration project will restore habitat in the Lake Borgne ecosystem and other areas affected by the MRGO navigation channel.
- The study areas encompass 3.86 million acres of land and open water.